To all whom it may concern:

Be it known that we, HENRY COLLINS and JOSEPH W. COLLINS, residents of the city of Pawtucket, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Stop-Motions for Twisting and Winding Machines; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to that class of mechanical devices called “stop-motions,” and is an improvement in the stop-motion for “twisters” set forth in United States Patent No. 517,030, bearing date of March 27, 1894, in which the operation of the twisting and winding of the yarn was stopped automatically by the separation of the two rolls that drew the yarn from the spools to supply the spindles when one of the strands of which the yarn is composed breaks to prevent the making of imperfect thread.

The object of this additional improvement is to prevent the loose end of the broken strand from catching on the surface of the lower roll when separated and continuing to draw the thread from the spools and wind it up around the roll.

It is fully described and illustrated in this specification and the annexed drawings.

Figure 1 represents a vertical section of a twister taken between two spindles, showing a side view of the thread-detaining device added to the invention described in said patent. Fig. 2 represents a vertical section of most of the devices shown in Fig. 1, taken on line 2 2 in that figure, showing a back view of the sliding vertical plate in its different positions and the plate to which it is attached, with a part of the trough that supports the same.

The parts of the machine not described herein are made substantially as stated in that patent.

In Fig. 1 all the parts are shown in running order to double and twist three yarns to form a single thread and wind it on the spindle-bobbin, each spindle and its set of devices being operated independently of the others in the twister, only one set being shown.

A is the end frame of the twister. C is the top board, and B is the spool-board, held on supports on the board C to hold the yarn-spool c c. An inverted box trough supports the rolls a b, that draw the yarn a from the spools c and deliver it to be twisted and wound on the bobbin f. The bearings of the roll b are not shown. The top roll a is held in slotted bearings attached to the trough D, the slots allowing the roll a to rise and fall, so as to rest on the roll b and cause a friction on the yarn between them sufficient to draw the yarn off of the spools c, but when the roll a is raised off of the roll b by the wedges j j, that move forward under the collars k k on the journals of that roll, the draft on the yarn ceases. The plate N has horizontal beveled extensions j, which project under the journals of the upper roll h h to lift it upon the forward movement of the plate N, to which it is attached. This plate N is fixed to the horizontal sliding bolt n, which is actuated through the medium of the revolving fluted roll K when the thread breaks, allowing the lever e to fall and engage it. Through the lower part of this plate N is a guide-pin d, on which this plate slides. This pin is fixed to the trough and serves to hold the plates in an upright position while receiving the forward movement. A shaft n, having a flanged collar k fast on it, held in bearings (not shown) in the trough D, receives a continuous revolving motion in the direction indicated by the arrow below it. When the bolt n is pushed back, the end of the arm p will rest in the hollow near the end of the bolt, as seen in Fig. 1, and keep it in place, and the wedges j will be held back, so that the roll a will bear on the roll b and draw the yarn from the spools c. To prevent the loose end of the yarn from sticking to the roll b, which revolves after the upper roll a is raised from 95, and winding the yarn around itself, a vertical sliding plate H is attached to the back of the plate N by means of a bolt passing through the sliding plate and screwing into the vertical plate. (See Fig. 2.)

The sliding clamp-plate H has a V-shaped projecting foot S on its lower end, by which it
is raised and held up in place when it is car-
ried back to its normal position. The foot
then rests on the top of the trough D, on
which it is supported and held up, as long as
5 the bolt \( n \) and the plate \( N \) are held back
against said trough. At the same time this
clamp-plate is carried back and raised the
wedges \( j \) are also withdrawn, allowing the
rolls \( a \) and \( b \) to continue feeding the threads.
10 The upper end of this vertically-sliding
clamp-plate \( H \) has a notch or slot \( E \) cut into
it from one side for the yarn from the spools
to pass through to the rolls \( a \) and \( b \). (See
Fig. 1.) The upper edge of this slot forms
15 one biting-jaw and its face is made on an in-
cline. A corresponding incline surface is also
made on the lower biting-jaw, which is on
the upper edge of the stationary clamp-plate
\( E' \). These inclined surfaces are found in
20 practice to be of great advantage on account
of their positive action and increased biting
force. When this plate \( H \) is up, the notch \( E \)
would be above the end of the plate \( N \), on
which it slides, and the yarn will pass freely
through this notch.
25 A lever \( a' \), pivoted at its middle to the plate
\( N \), has an arm \( e \), attached to its inner end, ex-
tending down into the trough \( D \) over the roll
\( k \), and it also has a bar \( o' \) in its front end, bear-
ing against the under side of the thread \( r' \).
30 By the breaking of the thread after it has left
the rolls the outer end of the lever \( a' \) will be
allowed to rise, and the arm \( e \) in its back end
will fall and come in contact with one of the
35 flutes or longitudinal ribs on the roll \( k \), with
the result of pushing out the bolt \( n' \), raising
the roll \( a \), and when the plate \( N \) and wedges
\( j \) are carried forward by the action of the
flanged collar \( k \) and lever \( a' \) the sliding plate
\( H \) will be allowed to drop of its own gravity
and draw the yarn down between itself and
plate \( N \) and hold it so as to prevent any of it
from being wound around the roll \( b \) if the
loose end should catch on that roll.
40 Having thus described our invention, what
we claim, and desire to secure by Letters Pat-
ent, is—
1. In a stop-motion, the combination of a
pair of drawing-rolls, a vertically-sliding
50 clamp-plate to bind the yarn when the rolls
are separated, said clamp-plate supported at
its lower end to hold it up, means for mov-
ing the upper roll by mechanism actuated by
the breaking of a thread, means for simulta-
neously giving said clamp-plate a forward
movement withdrawing said plate from its
support and allowing it to fall and bind the
yarn, substantially as described.
2. In a stop-motion, the combination of a
pair of drawing-rolls, a vertically-sliding
55 clamp-plate to bind the yarn when the rolls
are separated, said clamp-plate supported at
its upper end and having an inclined foot at its
lower end by which said clamp-plate is raised
60 and held up in place when in its back or nor-
mal position, means for moving the upper
roll by mechanism actuated by the breaking
of a thread and simultaneously withdrawing
said clamp-plate from said support and al-
lowing it to fall and bind the yarn, substan-
tially as described.
3. In a stop-motion, yarn-drawing rolls in
combination with a fluted roll, a bolt held
in bearings \( n' \) into, a vertical plate attached to said bolt and carrying a
70 wedge to raise the upper drawing-roll, a clamp-
plate held to slide vertically on said vertical
plate, slotted at its upper end and held up in
place by a fixed support at its lower end, a lever
controlled by the yarn to cause said fluted roll to actuate the bolt and give said
clamp-plate a forward movement thereby re-
leasing it from its support and allowing it to
fall and clamp the yarn, substantially as de-
scribed.
4. In a stop-motion, in combination a pair of
drawing-rolls, a wedge fixed to a longitudi-
80 nally-sliding plate and extending under the
bearings of the upper roll, a rotatable fluted
roll, a vertical sliding clamp-plate slotted at
its upper end and supported at its lower end
when drawn back in its normal position a lever
pivotally connected to said longitudi-
85 nally-sliding plate, and controlled by the
yarn to cause said fluted roll to drive the
wedge forward to raise the upper roll, simul-
taneously releasing the said clamp-plate to
fall and bind the yarn.
5. In a stop-motion the combination of a
pair of drawing-rolls, a sliding clamp-plate
having an inclined biting-surface on its
clamping-jaw, a fixed jaw having a cor-
respondingly-inclined surface for binding the
yarn when the rolls are separated, means for
moving the upper roll by mechanism actu-
atated by the breaking of a thread, means for
simultaneously giving said clamp-plate a
forward movement allowing it to fall and
bind the yarn, substantially as described.
6. In a stop-motion the combination of a
pair of drawing-rolls, a vertically-sliding
clamp-plate having an inclined biting-surf-
90 ace on its clamping-jaw, a fixed jaw having a cor-
respondingly-inclined surface for binding the
yarn when the rolls are separated, said clamp-
plate supported at its lower end to hold it up,
means for moving the upper roll by mechanism
acted by the breaking of a thread, means for
simultaneously giving said clamp-plate a
forward movement allowing it to fall and
bind the yarn, substantially as described.
back in its normal position, a lever pivotedly connected to said longitudinally-sliding plate, and controlled by the yarn to cause said fluted roll to drive the wedge forward to raise the upper roll, simultaneously releasing the said clamp-plate to fall and bind the yarn, substantially as described.

In testimony whereof we have hereunto set our hands this 27th day of March, A. D. 1902.

HENRY COLLINS.

JOSEPH W. COLLINS.

In presence of—

HOWARD E. BARLOW,

BENJ. ARNOLD.